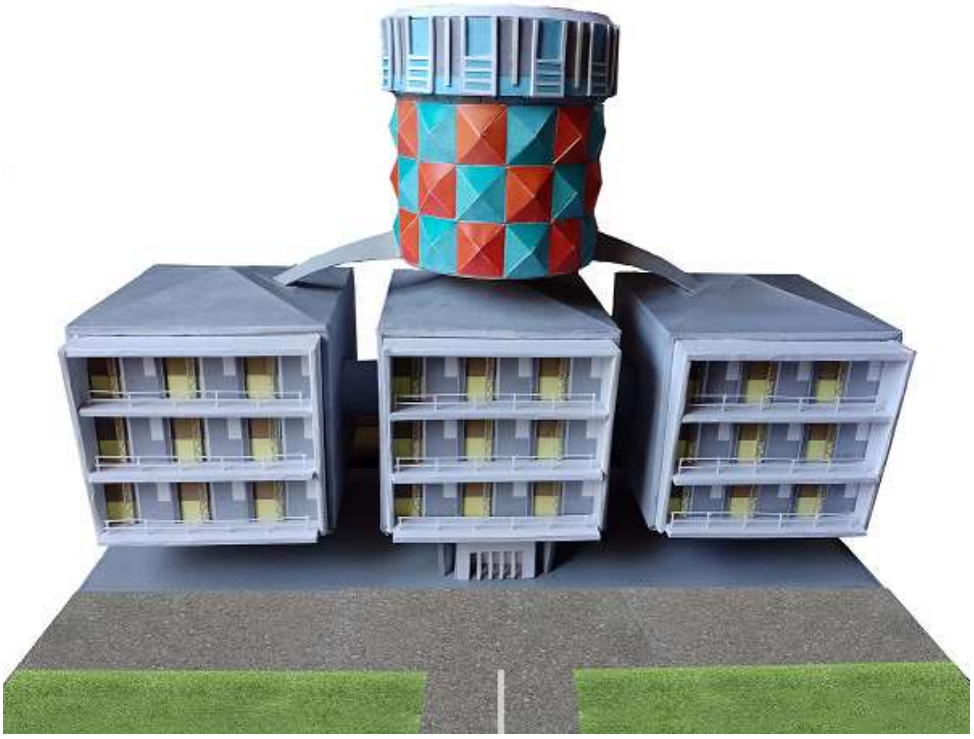
# MARINEVILLE

## World Aquanaut Security Patrol Headquarters

**1:200 Scale Model of The Control Centre**



Cardboard Model Scratchbuild Instructions

STINGRAY

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**Marineville**

Marineville is the headquarters of the World Aquanaut Security Patrol also known as WASP.

Ten miles inland on America's western seaboard, Marineville is a completely self-contained town built to withstand aerial attack, so most of its surface installations are capable of descending into underground silos when 'Battle Stations' is sounded. In addition to a network of missile silos and underground aircraft hangars, it has an extensive subterranean dock complex.

Linked to the Pacific by a ten-mile-long tunnel, Marineville provides maintenance and launch facilities for the WASP's fleet of submarine craft, including its newest and most effective strike vessel, Stingray. Military personnel live on-site in underground barracks or apartments. Some civilian workers live on-site, and a few commute in from the surrounding area.*

* Attribution Stingray Wiki

**The Control Centre Model**

When built, the model represents the heart of Marineville, its Control Centre.

At a scale of 1:200, the completed build is -

- 266mm high x 401mm long x 132mm deep.

or 10.5 in high x 15.8 in long x 5.2 in deep

If in real life at full size, this building would be -

- 52 metres high x 80m wide x 26.5 metres deep

or 170 ft high x 262 ft long x 87 ft deep

**Health & Safety**

*Parental supervision is required where children are using sharp tools and superglues. It is recommended that if using the latter, 100% acetone is on hand in the event of erroneous use of that item.*

*All chemical use should be used strictly to the manufacturers safety instructions.*

***No liabilities are admitted by the originator of these instructions and are at the builders own risk.***

**Materials**

- A3×3mm thick stiff cardboard – 4 sheets (not corrugated card)
  or A4×3mm thick stiff cardboard (Multiples off)
- A3 stiff 0.3mm thick cardboard – 1 sheet (For tower construction)
- A4 0.6mm thick card – 3 sheets or card from a cereal packet
- A4 1.5mm thick card – 1 sheet or double up and glue 0.6mm thick card
- Plain white A4 printer paper – 18 sheets
- Stiff A4 paper – 1 sheet
- 0.7mm (22 swg) Stiff Wire
- PVA Glue
- Pritstick or Scotch Glue Stick (Not recommended for thinner wraps such as -38- Handrails)
- Superglue
- Paper Towel
- Light grey acrylic paint
- White acrylic paint
- Model Filler

**Optional –** 0.8mm and 0.6mm ABS wire to replace the cardboard handrails.

Depending on the choice of cardboard sheet, either A4 or A3 sizes are suitable for the majority of printed parts requiring pasting or glue sticking onto them. The main base item -1- will require an A3 sheet at least large enough for that component and it is recommended that A3 sheet size is preferred throughout.

30mm outside diameter x 3mm wall cardboard tube (Aluminium foil roll inners are suitable) 28mm outside diameter cardboard tube from cling film roll can be used but, ensure all holes are then cut to 28mm or whatever measured diameter they are.

**Tools**

A4 Printer and the ability to printer in colour. Ink Jet or Laser Jet.

- 12" (300mm) Steel Rule
- 6" (150mm) Steel Rule
- Steel Set Square
- Sharp Craft Knife
- Cutting Mat
- Blunt blade for scoring or non-sharp edge of blade or screwdriver
- Tweezers
- A broad craft paint brush (No.9) for pasting
- Various mini clamps
- Masking Tape
- Pencil or Marker Pen
- Sticky Tape
- 180 Grade grit paper

Optional –

- Hole cutter 30mm diameter or 30mm Forstner Drill Bit
- Circle cutter (Divider)
- Engineers Odd Leg Calipers

**Build Methods and Choice**

**IMPORTANT – Printing**
*Before printing out all of the models wraps, it is suggested that sheet 'E' is printed out first on its own then measure items -61- Back Wraps to 117mm x 102mm. If the resulting print is different, alter the printing scale/ratio when printing the full set. For instance, if the longer length measures 115mm then divide 117 by 115 x 100 = 102% (Rounded to nearest whole number). If the longer length measures 118mm then divide 117 by 118 x 100 = 99% (Rounded to nearest whole number).*

**NOTE** -
*Sheets A, B, C and D are A3 card cutting guides and not intended for A4 sizes. The remainder of sheets are for printing onto A4 paper.*

There are two choices on how to build this model.

- It can be constructed fully 3D using the red and grey pyramid outer structure and upper light blue and white window and vent assembly and window effect.

- Building the whole structure in 3D and finishing the Control Tower exterior with printed wraps that give the impression of how the original was constructed, using the three flat accommodation block wraps without the additional 3D effect supports.

Building Marineville from the ground up similar to how a real building is constructed is the recommended way to carry out fitting the parts together although, a modular form can achieve good results provided squareness checks are carried out and some assemblies are left at least 2 hours for glue to set.

For paper wraps, use dilute PVA or a glue stick to fully cover the back of the print out when it has been cut from the paper sheet. Using PVA glue can be used with care taken not to rip the wetted paper when handling and also allowing at least 2 hours for the glue to dry. Using a heat source carefully, can reduce this time. Note that wetted parts may expand when glue is applied. This should be taken into account when building the round tower section of the model. It is suggested that any joins on that assembly are best hidden at the back or sides.

Vertical cardboard tube sections will require a degree of accuracy when being cut. An inaccuracy could result in the models sections being out of line. If there is a pillar drill and 30mm hole saw available, these can be used to attain a much more neater and accurate fit of the tube and flat section interfaces.

*Note: It may be required to adjust some positions and cuts to allow for misalignment, expansion, contraction or out off roundness due to the nature of the material of construction.*

***Tip:-*** *Any perpendicular cut to the tube is best achieved by either wrapping masking tape edges to the cut line around the tube. Alternately, a mitre box using the 90 degree cut slot can be used. Another method is to use the calibration on an adjustable set square from a good square end, marking around the tube at various points.*

***Tip:-*** *When using dilute PVA to glue three quarter wraps such as the balconies and surrounds, apply glue to the forward edge, apply the wrap and fold around. Only then paste the flat surfaces one at a time. To flatten the wrap to the card, press down onto a flat surface such as a cutting mat.*

***Tip:-*** *If you are unsure how to proceed, refer to photos of the building. The internet has many for reference.*

## Section – A
**Preparation**

Print out the full set of diagrams from the Marineville A4 Wraps Instructions document.

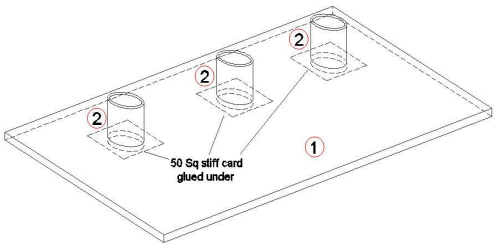
If using A3×3mm cardboard sheet (Note – Laminated or corrugated card is not recommended), refer to the A3 Cutting Layout Diagrams Sheet A, Sheet B, Sheet C and Sheet D for the optimal use of that size card.

For the base item -1-, use a piece of A3×3mm thick cardboard sheet, mark out and cut out the 3 off 30mm diameter holes on the dimensions shown in *Sheet A*. These holes are for the support tubes -2- for each main modules of the lower building of Marineville. The 58.5mm backstop distance will be used to square up the model during the start of the build. An additional support frame around the underside perimeter of item -1- made from either wood or strips of 3mm card stood end. This will prevent too much cardboard distortion.

Cut the following from 30mm diameter tube as in Sheet A:-

- 3 off apartment block supports tubes item -2-
- 1 off horizontal support tube item -3-
- 1 off Control Tower support tube item -4-

Refer to the diagram on the right – From thick 0.6mm card cut 3 off 50mm square pieces and glue under the 30mm holes that pass through the base. From the opposite side glue in the apartment block support tubes items -2- making sure they are square to the base.




The tubes and base top surface sub-assembly should now be painted light grey.

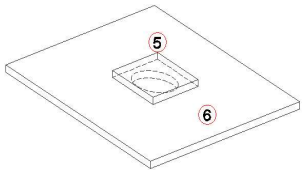
If required, the frontage area can be painted as grass and road. Refer to the graphic in this document and online photos for positions.

## Section B
**Accommodation Module Sub Assemblies**

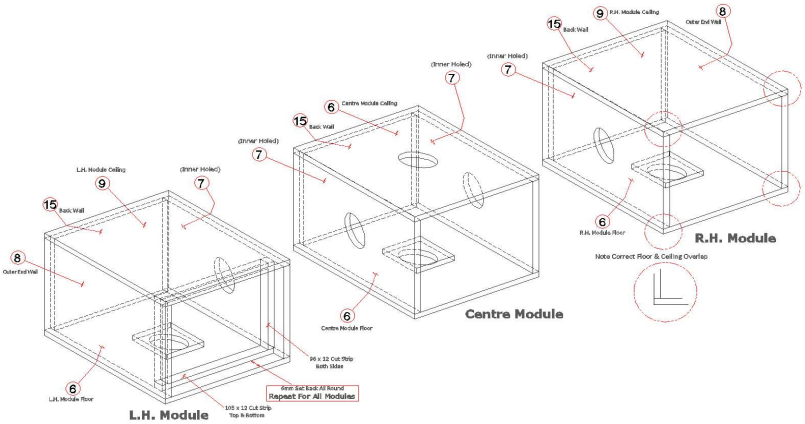
***Refer to the A3 layout sheets*** *Sheet B, Sheet C and Sheet D* ***for the optimal cutting arrangement and should be the next step in the construction following the sizes given on those layout sheets.***
*(Also, cut the 3mm thick circular parts required to make the control tower).*

> **Tips:-** *To get the optimal use of 3mm card, refer to the Cutting Layout Diagrams Sheet B, Sheet C and Sheet D before committing to any use of it.*
>
> *It is best to mark out the dimensions shown using a craft knife and steel ruler to score a few times. Final cuts can be carried without the use of a steel rule.*
>
> *Make sure to cut out the smaller parts first as this allows them to be processed more easily.*

Prepare all three module floors -6- by gluing items -5- to the topside central over the 30mm hole as shown in the diagram below. These acts as stops for the module support tubes items -2-.




Proceed to assemble the three accommodation modules noting the correct floor and ceiling overlaps. The bottom floor pieces items -6- support the walls, backs and fronts. Refer to the circled indications in the diagram below.
If available, use 90 degree clamps when fixing the floors and walls and the ceilings and walls.




From 3mm cardboard, cut 6 off 105mm x 12mm strips items -10- and 6 off 96mm x 12mm strips items -12-. Glue the longer strips inside all three modules 6mm in from the front edge, top and bottom. For the sides, repeat with the shorter strips. These backstops allow the front facias to be easily set in place.

**WARNING -**
*With the exception of the accommodation balcony facia wraps ensure that the printed wraps for the outer surfaces of the modules are applied in order before proceeding with any more assembly.*

## Attaching Order of Wraps For Module Walls & Floors

1. 54
2. 55
3. 56×2
4. 57×2
5. 59×3
6. 61×3

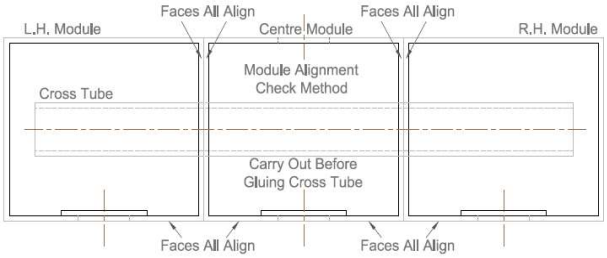
Once complete, proceed with the following.

**Horizontal Support Tube**
The horizontal support tube item -3- that passes through the three accommodation modules must be a maximum of 315mm long *(The standard overall length of a paper towel roller centre is 360mm).*

This 315mm length allows the three box modules to be butted together to dry test their alignment across their faces.

DO NOT fix the modules when assembled onto their support tubes items -2- just yet until the cross tube item -3- has been installed through the centre module and the L.H. & R.H. module have been installed at their respective sides of the centre module. Dry fit this assembly onto the support tubes and check for squareness and alignment.

When satisfied that the modules align correctly, apply PVA glue onto the items -2- support tubes and their mating holes on the undersides of the accommodation modules.




*Alignment of the Modules*

With the base plate sitting vertical on a flat surface and the modules on their backs, introduce their mating surfaces.

From the front opening in the accommodation modules, apply PVA glue to the cross tube where its passes through the side walls of the modules. Turn the cross tube while pasting. Recheck for squareness and alignment and allow sufficient time to set.

Insert the tower support tube item -4- through the ceiling of the centre module until it touches the top of the cross tube and check with a set square that it can be fixed perpendicular to the flat part of the ceiling. When satisfied, apply glue where the tubes meet and around the hole in the centre module ceiling card. Allow to dry and set.

**Module Roofs**
Cut items -49- and item -50- (2 off) from 0.6mm card and paste wraps items 58 x 2 and item 60 but leaving the outer edges as plain paper. This ensures that the outer parts of the wraps applied later do not protrude too much. Notch out the Vee part and cut the 30mm hole in the centre pitched roof item -60-. On the two other pitched roofs remove the small triangular sections where the tower pylon assemblies will pass through. Fold up the roofs to form a pitch and glue the tabs under the adjacent roof surface and allow to dry.

Before attaching to their respective modules, check the roof with the 30mm hole fits correctly to the centre module.

Note that the roofs with the small triangular cut-outs are positioned towards the centre module. Again, check the fit of these components. When satisfied all the roofs fit, glue them in place.

**Accommodation Facia Wrap**
Apply the accommodation facia wraps items -23- to their parent 3mm thick card items -15- before attaching to the model. Ensure that these are fitted correctly into the accommodation block assemblies pushed onto the 6mm set backstops with the white windows in the upper position and the top note upwards. Remove any over spill of glue around their perimeter. When dry, check around the perimeter and remove any excess glue standing proud of the flush surface of the wrap.

**Fitting and fixing the module underfloor fillet triangular plates to the support tubes.**
The left and right hand module outer underfloor fillet triangular plates items -11- are reasonably easy to line up and glue in place using tweezers. Once those have been completed, proceed to the three along the back of the building.

For fitting the more tricky inner underfloor fillet triangular plates lay the model on its back, it is suggested that an 'L' shaped piece of 0.6mm card is used as a setting tool. Using the outermost underfloor fillet triangular plates items -11- as a guide, trim the 'L' card so that it fits under the pre-installed outer underfloor fillet triangular plates.

**Balcony Surrounds and Balconies**
Note that the wraps items -62- for the outer surrounds are handed with the balcony setting heights marked on the inner side. These should be paired and glued inside the outer walls items -16- of the accommodation blocks and onto the face of the accommodation wrap. Wrap items -40- to the upper surround item -13- and Fit. Trim to suit where needed.

**Balconies**
Ensure that the balconies items -14- are drilled for their handrails once the wraps items -31- and -32- have been applied. The three balconies with shortened wraps on the undersides are fitted at the lower floor level. Trimming to

suit where needed. The remainder are fitted according to the markings on the surround walls. Again trimming to suit where needed.

**Balcony Handrails**
Note – It is advised that fitting the handrails is one of the last operations as these can easily be damaged. Pritstick or Scotch Glue Stick is not recommended for thinner wraps such as items -38- Handrails.

There are three handrails to each accommodation block, nine in total. These can either be made from pasting the handrail printouts items -38- onto thick paper or thin card and then carefully cutting out the shape of the handrail.

Cut 27 off short 8mm lengths of 0.7mm (22 swg) stiff wire and glue vertically into the floor of the balconies on the centre marks shown of the floor wraps. Ensure the wires are set perpendicular to the floor. Once the wires are fully set, glue the handrail posts from the items -38- to those wires and allow to set. Adjust the handrails carefully to straighten any misalignments. Cut off any wires that protrude above the handrails. Touch up any bare edges with white paint.

**Option –** Use 0.8mm rod for the uprights and 0.6mm for the top and mid rails from ABS rod superglued to replace the cardboard handrails. Cut the uprights from 0.6mm diameter rod 12mm long, glue into the balcony floors protruding at least 8mm and when set, use two small pieces of 3mm glued together to form a 6mm setting tool. Place the tool against each post and snip off the excess with sharp scissors or sidecutters. Cut 18 off lengths of 0.6mm ABS rod 102mm long and superglue one length on top of a line of posts followed by the second 3mm from floor level using 3mm card as a setting tool. Trim excess from either side of the outer posts.

***Hint –*** *Superglue the top rail to one end post and allow to set. Progress gluing along by fixing the rail on the next post to achieve a good straightness to the handrail. Repeat for the lower rail.*

*If using slow acting superglue, put a spot of water onto the glued joint. This accelerates the fixing time for the glue.*

**Option – Balcony Back Wall Steelwork Stanchions & Concrete Supports**
Cut and score items -24- to full length before fully cutting out the full length using a hard edge such as a steel rule. Fold at 90 degrees a front and a side edge. Repeat for the opposite edge. This assists in aligning the wrap onto the backing card. Now, cut the wraps before applying to card into multiples of three to assist in accurate alignment with the backing card.

Double up and glue two pieces of 0.6mm card together and cut a 3.2mm wide strip that is slightly longer than the whole strips of items -24-. Wrap and glue the multiples of three items -24- to each 3.2mm wide card length and wrap fully around the card strip and glue. Repeat for all the wraps. Separate the 27 off 28mm lengths.

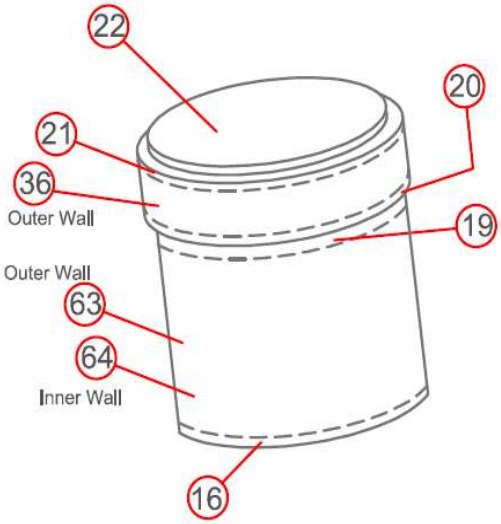
Glue each 28mm stanchion on top and between the two vertical parallel tan coloured lines on the accommodation block wrap with the yellow section at the bottom.

For the 18 off Balcony Concrete Supports items -39-, repeat as the previous instructions for the steelwork stanchions in regard to scoring and cutting into multiples. Double up and glue two pieces of 0.6mm card together and cut a 3.0mm wide strip that is slightly longer than the whole strip of item -39-.Separate the 18 off 28mm lengths. Glue each Concrete Support on top of the black vertical areas on the accommodation block wrap.

**Centre Accommodation Module Entrance Hall and Forward Supports**
Item -42- should be mounted on 0.6mm thick cardboard taking card to cut out the slots and then folded round and glued using item -43- at the back to set the hall square. Fit the completed hall central under the centre accommodation module with the upper edge flush with the module forward edge.

Items -15- do not have wraps and should be painted light grey and installed with the longer edges at the top. The back edge should be touching the centre tube radially and also touching the back edge of the entrance module.

**Tower**
The tower main structure is constructed mainly from flat concentric discs of 3mm thick card and 0.6mm flat card rolled into tubes and backed up inside by a further 0.6mm flat card rolled into tubes inside the outer tube.




**Lower Pyramid Clad Section**

Make up the roof for this assembly by concentrically gluing Tower Lower Sect Ceiling item -19- under Tower Upper Section Floor item -20-.

Roll a 77mm x 324mm piece item -63- for the outer wall of the lower tower section. Glue this card cylinder with its lower edge level with the Tower Base item -16- Use the previously assembled items -19- & -20- without gluing to check the roundness of the lower tower section. When satisfied remove the previously assembled items -19- & -20- and fit and glue inside the second rolled cylinder 71mm x 324mm piece item -64- for the inner reinforcement of the lower tower section. Position the joins opposite each other with the inner ring pushed to the bottom. Fit and glue the previously assembled items -19- & -20-.

Glue item -53- onto 0.6mm card and cut out and split down the middle. Form a chamfer shape until the ends meet and check its fit by wrapping it around the lower tower section with the wider part facing upwards. The Wider circumference should match up to the underside of the upper sections diameter. Once the fit has been confirmed, glue the item -53- tab then fit and glue the finished chamfer shape to the barrel of the lower tower section and its upper edges glued to the underside of the upper section.

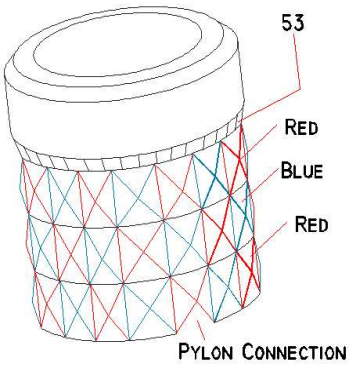
There are two options for the next step.
Use the flat wraps item -26- for quick assembly. The plain triangular notches face the bottom of the tower assembly and must be set diametrically opposite to each other. These are the alignment marks for the tower connection pylons to the outboard accommodation block roofs.

The second step involves a little more work and requires patience but gives a better look to the model.

Glue items -27-, -28-, -29- and -30 to stiff paper. Carefully score outwards from the 'X' of the pyramid shapes and around their edges and cut out.

Bend up and glue the tab for each pyramid and join item -27- to -28- but do not complete the ring until a test fit shows they are a good fit around the lower tower. When the two rings from items 27- to -28- are ready, starting at the top against the previously assembled item -53-, glue them in place with the darker shades at the bottom and the adjacent rings alternating colours.

Bend up and glue the tab for each pyramid and join item -29- to -30- but do not complete the ring until a test fit shows they are a good fit around the lower tower. Glue them in place with the darker shades and plain notches at the bottom and the adjacent rings alternating colours Red above Blue or Blue above Red.



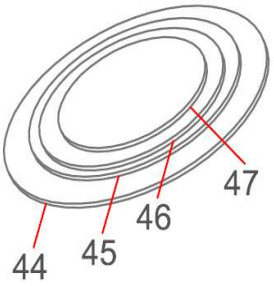

**Top and Dome Structure**
From 3mm card cut a circle 104mm diameter. Double up and glue two pieces of 0.6mm card together and cut a 15mm wide strip. From this strip cut 3 off 70mm lengths. Glue these strips on the underside in an equilateral triangle onto the previously cut circle of 104mm diameter making sure there are no protruding corners. Glue this 104mm diameter assembly concentrically on the top of the tower.

To provide support for the tower top chamfer, double up and glue two pieces of 0.6mm card and cut a 2mm wide strip 330mm long, or two shorter pieces equal to the same length. Glue this thin strip around the perimeter of the previously fitted 104mm disc and into the corner where it meets the roof of the tower so as to provide support to the bevel piece fitted later.

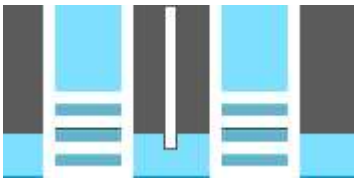
Build the 4 ring and disk foundation as in the diagram on the right. Now cut from the 0.6mm card another disk of 85mm diameter. Form this into a slight dome shape by pressing between thumbs and fingers while rotating. Test fit until a satisfactory dome shape is achieved. Slightly dampen the dome and glue onto the 4 ring and disk foundation and continue pressing the edges until a firm adhesion is complete.

Cut out the thin crescent ring -51- after gluing to 0.6mm thick card. Ease the shape until the ends can be joined forming a 45 degree bevel. Do not glue ends together just yet.

Test fit the thin crescent ring -51- and trim if needed. Glue in place and once the assembly is dry, paint the top roof structure white.




**Tower Windows and Vents**
Double up and glue two pieces of 0.6mm card and cut a 2mm wide strip and cut 12 off 24mm long pieces. Paint them white. When dry, glue central from the top of the grey rectangular windows on item -25-.



From the same double thickness 0.6mm card, cut a 15mm wide strip and paste a vent wrap -41- making sure the bottom wrap below the vent slots butts against the end of card. After gluing and wrapping the side edges, cut squarely through the card using the wrap as a guide. Repeat this another 11 times. When dry, carefully remove the rectangular sections between the two uprights above the vents. Touch up the bare ends and cuts using white paint. When dry, glue central from the top and between the grey rectangular windows on item -25-.

Again using 1.2mm cardboard, cut 2.2mm wide strips and make 12 off 25mm long pieces then wrap items -65- and glue over the windows as the diagram on the left.

**Curved Tower Pylons**
Dry fit the completed tower assembly onto the vertical central support tube item -4-.

Paste items -33-, -34- & -35- onto 0.6mm flat card. When dry, carefully cut out the curved shapes and tabs freehand. Gently put a slight curve onto each piece to assist with assembly.

The following assembly will require patience. From the narrow ends of -34- & -35- glue and align both parts using the first two tabs folded at about 90 degrees. Allow to dry until bending the remainder of the curves together doesn't separate the previous gluing. Glue, bend and form the remainder of the pylon tabs and allow to set. Holding these parts together while they set will be necessary. Item -35- should now be glued, joining the edges of the vee shaped pylon parts assembly. Repeat for the second pylon and test fit both pylons.

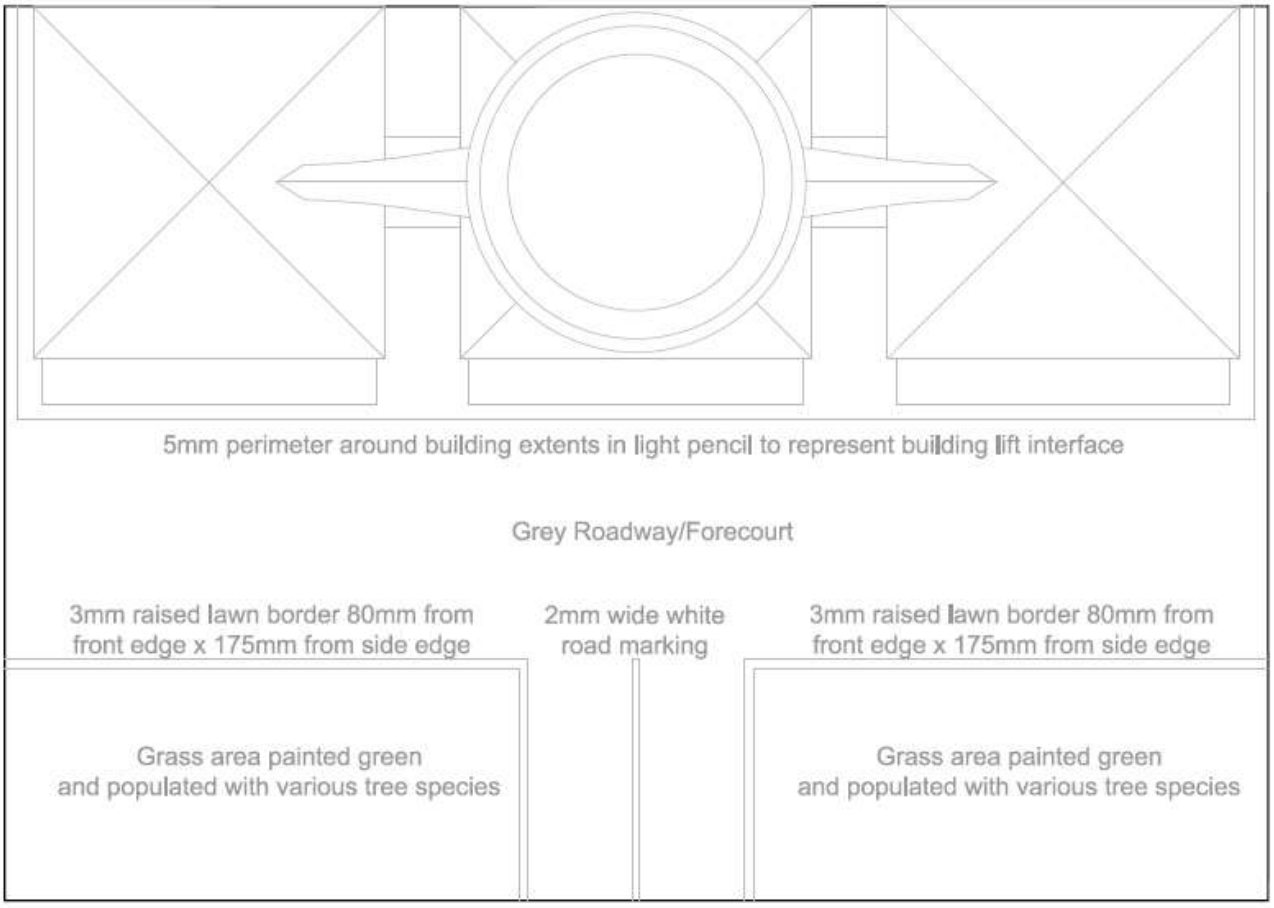
To conceal the top join on the top of the pylons, use model filler to conceal the dips where the tabs are showing.

Slide the triangular pylon roof gap concealment item -37- onto each pylon printed side towards the wider end taking care not to rip it. When the fit is satisfactory, glue the tower to its vertical tube at the same time as gluing the pylons to both outer module roofs. Glue and fit the pylons onto the tower and through the outer accommodation block roof holes at the same time. Glue item -37- onto the pylon hole in each roof to conceal any gaps.

**Finishing**
Using white and grey paint, touch up any marks on the model. To get a lasting finish, it is recommended that at least one coat of acrylic matt varnish is applied all over.

To add to the Marineville Control Centre model, you may wish to print out if not already done, the model of the BP tanker, fold and glue the tabs and place on the forecourt of the control centre.

To add finish to the roadway or forecourt in front of the Marineville Control Building, mark out, fit lawn borders, paint and if required weather the base as shown below. Plant model trees on the lawned area to realism. If also required, the building can be weathered.


5mm perimeter around building extents in light pencil to represent building lift interface
Grey Roadway/Forecourt
3mm raised lawn border 80mm from front edge x 175mm from side edge
2mm wide white road marking
3mm raised lawn border 80mm from front edge x 175mm from side edge
Grass area painted green and populated with various tree species
Grass area painted green and populated with various tree species

*Baseboard Suggested Layout on A3 Cardboard*

***Andrew T. Finney***